

In the Claims

1. A method of monitoring operation of an automated tool comprising positioning in close proximity to said automated tool at least one wireless sensor,
energizing said wireless sensor by inducing current in an electrical conductor through relative movement between said electrical conductor and a magnetic field,
monitoring at least one condition of said automated tool by said sensor, emitting signals containing sensor information in space to a microprocessor, and
processing said sensor information in said microprocessor.
2. The method of claim 1 including
in the event that the microprocessor determines that said automated tool has departed from desired conditions of operation issuing a responsive signal.
3. The method of claim 1 including
effecting said relative movement by movement of a source of said magnetic field with respect to said electrical conductor.
4. The method of claim 3 including
employing a permanent magnet as said source of said magnetic field.
5. The method of claim 4 including
employing as said electrical conductor an electrically conductive loop,
and
extending said permanent magnet through said electrically conductive loop.
6. The method of claim 5 including
a spring operatively associated with said permanent magnetic to effect movement of said permanent magnet responsive to movement of said automated tool.
7. The method of claim 1 including
providing a flexible material on said sensor, and

effecting said relative movement between said electrical conductor and said magnetic field by distortion of said flexible sensor.

8. The method of claim 1 including
employing said method to monitor a said automatic tool performing an operation on a workpiece.

9. The method of claim 1 including
said at least one sensor being a microelectromechanical system device.

10. The method of claim 1 including
employing a plurality of said sensors in said method.

11. The method of claim 9 including
measuring by said microelectromechanical system device at least one motion-related characteristic of said automated tool.

12. The method of claim 1 including
employing as said automated tool a progressive stamping press operating on a metal sheet workpiece.

13. The method of claim 1 including
transmitting said sensor signals to said microprocessor employing an RF carrier.

14. The method of claim 13 including
transmitting said sensor information as digital information.

15. The method of claim 14 including
employing said method to monitor misfeed.

16. Apparatus for monitoring operation of an automated tool comprising an automated tool,
at least one wireless sensor for monitoring a condition of said automated tool and emitting signals through space,

said sensor being a wireless sensor having an electrical conductor mounted for relative movement with respect to a magnetic field such that relative movement therebetween will induce electrical current in said electrical conductor for energizing said sensor, and

a microprocessor for receiving said sensor signals and determining the departure from a desired characteristic exists and, if so, emitting a responsive signal.

17. The apparatus of claim 16 including
said source of magnetic field being a permanent magnet.

18. The apparatus of claim 17 including
said electrical conductor being an electrically conductive loop
operatively associated with said sensor for energizing the same, and
said elongated permanent magnet extending through the opening in
said electrically conductive loop.

19. The apparatus of claim 18 including
a spring operatively associated with said permanent magnet to
establish relative movement of the same with respect to said electrical conductor
responsive to movement of said automated tool.

20. The apparatus of claim 17 including
said sensor being composed in part of a flexible material which is
structured to create relative movement between said electrical conductor and said
permanent magnet responsive to movement of said automated tool.

21. The apparatus of claim 16 including
said at least one said wireless sensor being a microelectromechanical
system device.

22. The apparatus of claim 21 including
said apparatus having a plurality of said sensors.

23. The apparatus of claim 16 including
said automated tool being a progressive stamping press for performing
operations on a metal sheet workpiece.

24. The apparatus of claim 16 including
said microelectrical system device sensors being structured to monitor
acceleration related conditions.

25. The apparatus of claim 16 including

said microprocessor being structured to issue a responsive signal in the event it determines that said automated tool has departed from desired conditions of operation.

26. The apparatus of claim 25 including
said microprocessor responsive signals being selected from the group consisting of an automated tool shutdown signal, an alarm signal and the data delivery signal.